US/China High-Efficiency Motors Demonstration Project

Location: Oil fields in China
Type: Efficient industrial motors
Size: 10 motor retrofits
Funding: Total: US$75,000
Private: US$75,000
Objective: To increase efficiency of industrial motors.
Duration: 2000–2002
Scale: Rural

Summary

Under this project, Shengli Oil Company, the second largest oil company in China, was identified as a potential project host for energy-efficient industrial motors. Ten oil field motor retrofits were demonstrated, and savings were greater than expected. As a result, Shengli Oil recently decided to expand the energy-efficient motors program and has set aside US$60,000 to add more energy-efficient motors in its system. On the basis of this success, other oil companies are now evaluating their systems for use of energy-efficient motors.

In-Country Principles That Attracted Nondonor Financing

- Capacity building and informed decision making
- Public participation in, and support of, sustainable development
- Institution building and access to justice and enforcement of laws

Chinese research institutes helped create the standards that were integral to the design of national energy-efficient motors certification programs and efficiency standards. Such standards allowed motor manufacturers to differentiate their motors as efficient, able to produce real savings, and perform as expected.

Capacity-building activities that helped attract private financing included dissemination of best practices and participation in international forums and workshops to increase the awareness, knowledge, and skills of sector professionals.

Increased public knowledge and participation in energy decision making through professional training and outreach programs also helped attract private-sector interest.

Financing

Project investment for the first phase (retrofitting of 10 motors) was US$15,000 and was privately financed by Shengli Oil Company. On the basis of the success of phase one, Shengli has committed an additional US$60,000 to implement more energy-efficient motors in its system.

The Project

Shengli Oil Company has been interested in implementing technologies and policies that improve cost efficiency. It had already implemented demand-side management in many technologies, but not in motors. The company has more than 14,000 motors installed, consuming 14.2% of total production cost. Retrofitting 10 motors was so cost-effective that Shengli's parent company, China Petroleum and Chemical Corporation (SINOPEC Corp.), requested that all 7 of its subsidiary companies assess their potential for similar energy-efficient retrofits and report back with proposals to implement these retrofits.

Industrial, commercial, and utility sectors are benefiting from the project.

Technical Data

The high-efficiency motors pump oil from the ground and are fueled by conventional power generation through the utility grid. (About 70% of China's power is generated using coal.) After retrofit, the motors are still fueled from the power grid but are more efficient and use less power.

Performance Data

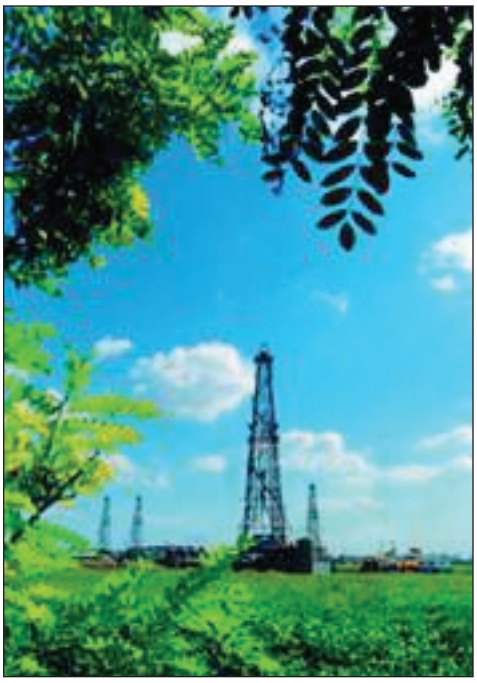
The new motors use about 9.6% less energy than the older motors.

If high-efficiency motors replaced all of Shengli Oil Company's broken motors, expected savings would be US$4,600,000 per year.

The estimated payback period for the retrofit is about seven months.

Participants and Roles

Shengli Oil Company's Demand-Side Management Office identified and implemented the project. The United States Environmental Protection Agency (USEPA) and the China State Development Planning Commission manage the US/China Technology Cooperation Agreement Pilot Project, which sponsored the demonstration project. The US Department of Energy's (USDOE's) National Renewable Energy Laboratory (NREL) and China's Tsinghua University coordinate technology activities. The International Institute for Energy Conservation led technical assistance and evaluation efforts. The USDOE helped provide technical assistance in monitoring, evaluating, and demonstrating the energy and cost savings.



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